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(54) METHOD FOR PRODUCING HIGHLY STRONG POLYLACTIC ACID FIBER

(57)Abstract:
PURPOSE: To obtain highly strong polylactic acid fiber excellent in toughness, heat resistance and biodegradability and useful for clothing, medical treatments, etc., by continuously copolymerizing a specific amount of L-lactic acid, etc., with a specific amount of polyethylene glycol and subsequently spinning the copolymer under specific conditions.
CONSTITUTION: This method for producing the highly strong polylactic acid fiber comprises continuously copolymerizing 99.9-85wt.% of L-lactic acid, D-lactic acid and/or their cyclic dimers (lactides) with 0.1-15wt.% of a polyethylene glycol having a mol.wt. of ≥300 in a melted state, directly melt-spinning the melted copolymer in a spinning head without solidifying and pelletizing the copolymer, drawing the spun fiber to a length of ≥3 times, and subsequently thermally treating the drawn fiber. The obtained objective polylactic acid fiber maintains a mol.wt. of ≥70000 and has a fiber strength of ≥3g/d. A hindered phenol compound and/or a hindered amine compound are preferably added to the polymerization system in amounts of ≥10ppm, and the melting point of the fibers is preferably ≥130° C.